X9SBAA
X9SBAA-F

USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

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Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPERMICRO X9SBAA motherboard product series. This product is intended to be professionally installed and serviced by a technician.

About This Motherboard

The X9SBAA motherboard series is a value-driven product aimed at users who demand a reduced-cost, low-power motherboard for PC, storage, embedded or micro server platform applications.

The X9SBAA motherboard series comes with the Intel® ATOM SoC S1260 (BGA1283, 8.5W) CPU installed and other features such as ECC-DIMM support, USB 3.0 ports, SATA 3.0 ports, and on-board VGA and IPMI LAN (X9SBAA-F). This enables the X9SBAA motherboard series to deliver cost-effective performance in a small form-factor package.

Manual Organization

Chapter 1 describes the features, specifications and performance of the mainboard and provides detailed information about the chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for video, memory and system setup stored in the CMOS. **Chapter 4** includes an introduction to the BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A provides BIOS Error Beep Codes.

Appendix B lists Driver Installation Instructions.

Conventions Used in the Manual:

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:

Danger/Caution: Instructions to be strictly followed to prevent catastrophic system failure or to avoid bodily injury

Warning: Critical information to prevent damage to the components or data loss.

Important: Important information given to ensure proper system installation or to relay safety precautions.

Note: Additional Information given to differentiate various models or provides information for correct system setup.

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Chapter 1

Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail and to provide you with the highest standards in quality and performance.

Please check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

All the following items are included in the retail box only.

- One (1) Supermicro Mainboard
- Two (2) SATA cables
- One (1) I/O shield
- One (1) Quick Reference Guide

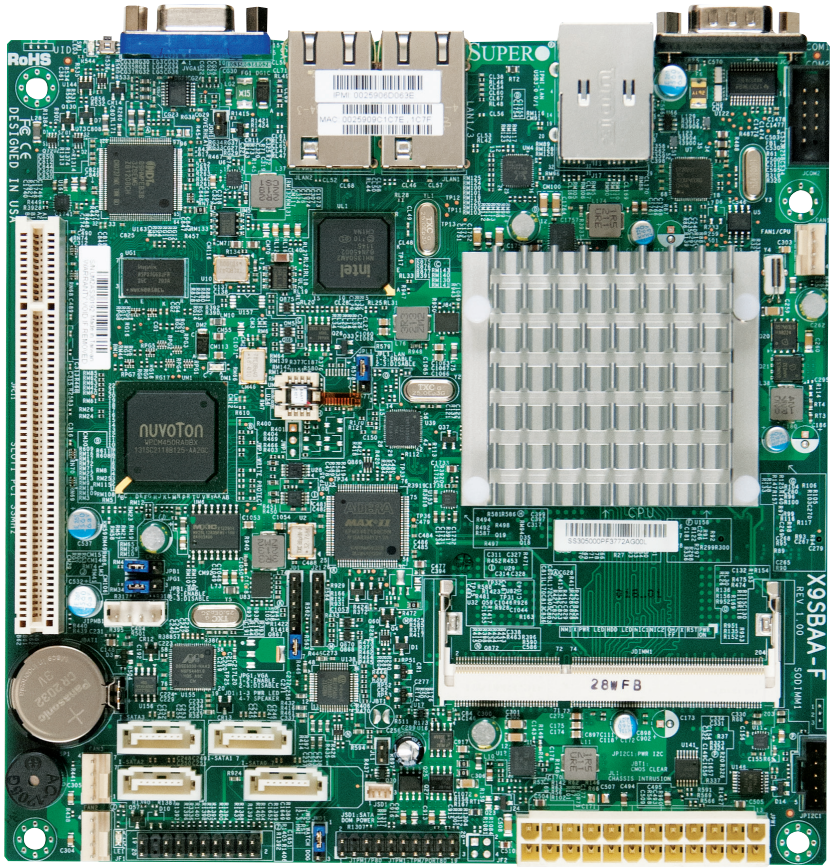
Note: For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your motherboard.

- SMCI product manuals: http://www.supermicro.com/support/manuals/
- Product Drivers and utilities: ftp://ftp.supermicro.com/

Warning: For safety considerations, please refer to the complete list of safety warnings posted on the Supermicro website at http://www.supermicro.com/about/policies/safety_information.cfm.

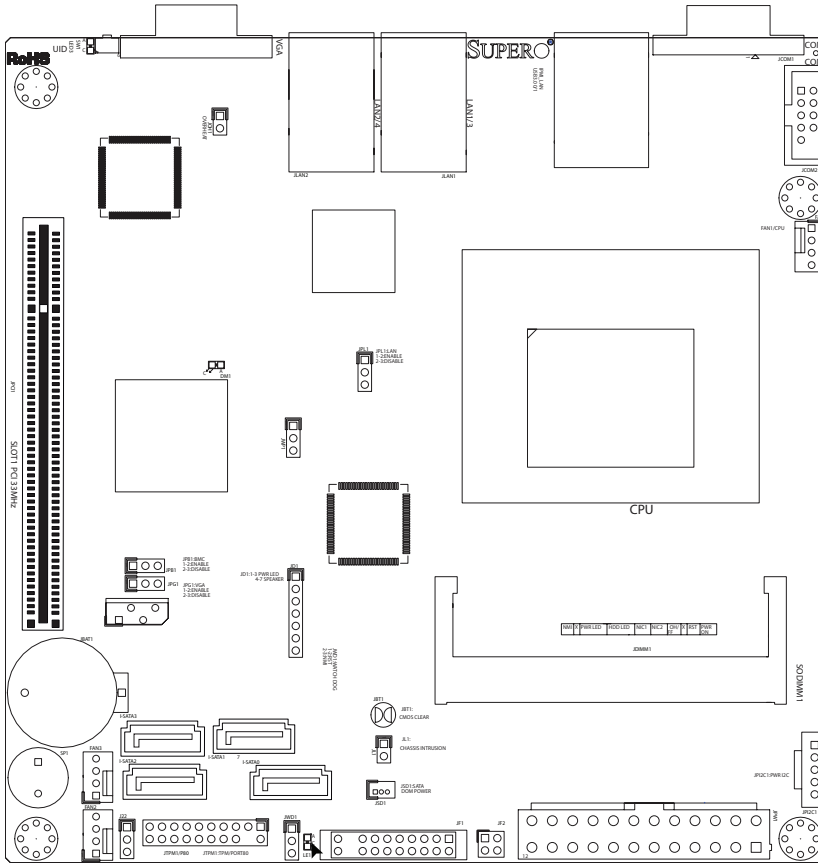
If you have any questions, please contact our support team at support@supermicro.com.

SUPERMICRO X9SBAA Motherboard Series Image



Note: All graphics and images shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the image shown in this manual.

X9SBAA Motherboard Series Layout

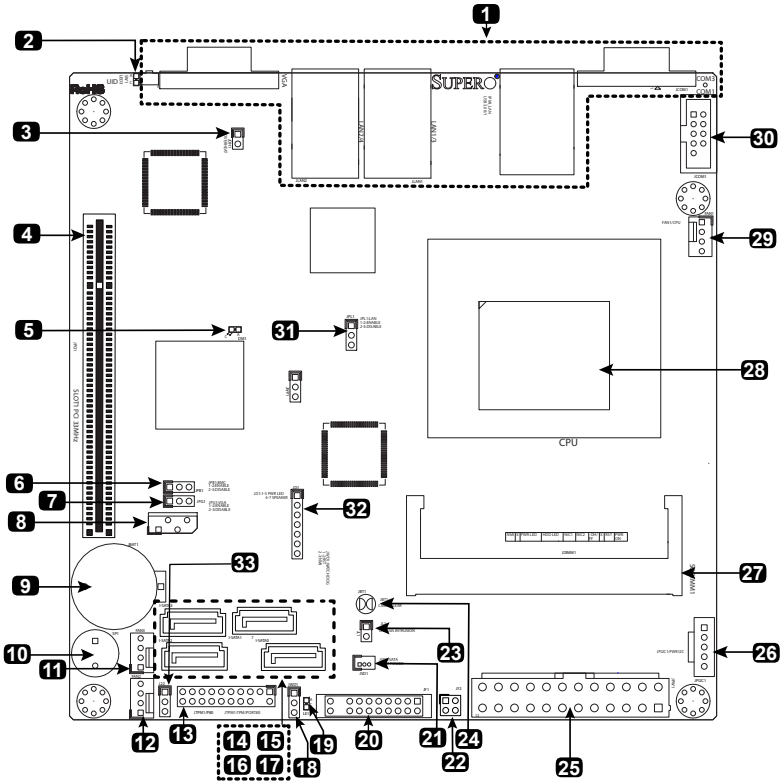


Important Notes to the User

- Jumpers not indicated are for testing only.
- See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
- "□" indicates the location of "Pin 1".

X9SBAA Motherboard Series Quick Reference

(not drawn to scale)



Jumper Descriptions

Item #	Jumper	Description	Default
6	JPB1*	BMC Enable/Disable	**1-2 (Enabled)**, 2-3 (Disabled)
7	JPG1*	On-board VGA Enable/Disable	**1-2 (Enabled)**, 2-3 (Disabled)
18	JWD1	Watch Dog Timer Reset	**1-2 (Reset)**, 2-3 (NMI)
24	JBT1	CMOS Reset	Short contact pads to reset CMOS
31	JPL1	LAN Enable/Disable	**1-2 (Enabled)**, 2-3 (Disabled)
33	J22	AC On Default	**1-2 (On)**, 2-3 (Off)

Ports, Connectors, LED Indicators

Item #	Connector	Description
1	Back Panel I/O	See detail on page 2-6
3	JOH1	System Overheat Header
4	SLOT1	33MHz PCI Slot (Slot 1)
8	JIPMB1*	4-pin External BMC I2C Header
9	JBAT1	Internal Backup Battery
10	SP1	Internal Speaker/Buzzer
11,12,29	FAN3,2,1	System Fan Headers (FAN1=CPU Fan)
13	JTPM1	Trusted Platform Module (TPM) Header
14,15,16,17	SATA3,1,2,0	Internal SATA Ports
20	JF1	Front Panel Control Header, see detail on the right
21	JSD1	Disk-On-Module (DOM) Power Header
22	JF2	Reserved
23	JL1	Chassis Intrusion Header
25	JPW1	24-Pin ATX Power Header
26	JPI2C1	Power Supply SMBus I2C Header
27	SODIMM1	Memory Slot (SODIMM, up to 8GB)
28	CPU	Intel ATOM SoC S1260, BGA1283,8.5W,2.0GHz 2C/4T
30	COM1*	Internal COM1 Header
32	JD1	Pins 1-3: Power LED, Pins 4-7: Ext. Speaker Header

Item #	LED	Description	Color/State	Status
2	UID*	Unit ID LED	Blue/Solid	Unit ID switch is on
5	DM1*	IPMI Heartbeat	Green/Blinking	IPMI On/Normal
19	LE1	System Power LED	Green/Solid	System On/Running

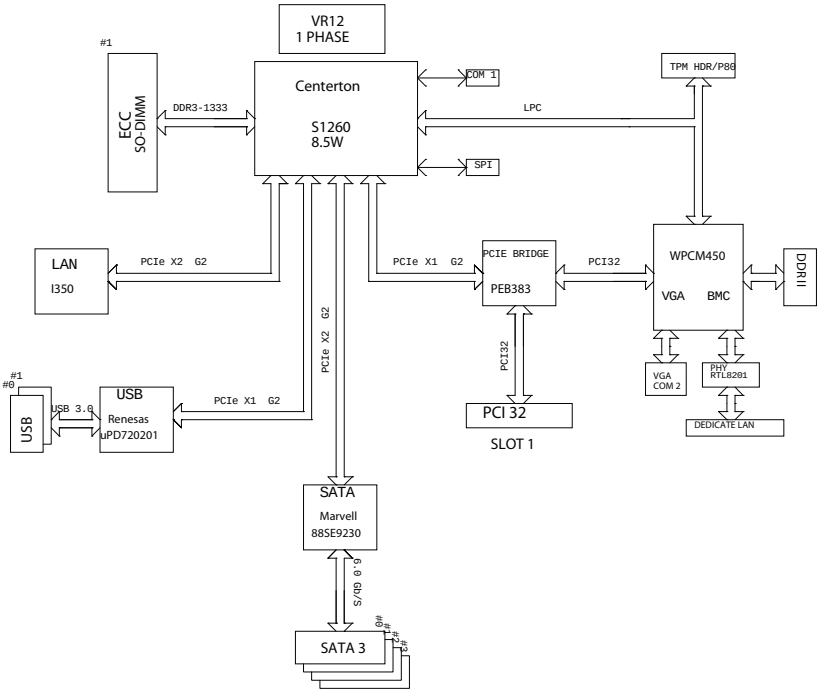
* X9SBAA-F Only

Motherboard Features

CPU	Single Intel® ATOM SoC S1260,BGA1283, 8.5W	
Memory	One (1) ECC-DIMM slot supports up to 8GB of DDR3, unbuffered, 1333 MHz, ECC SO-DIMM memory	
	Supports single-channel memory bus	
	DIMM sizes	
	ECC-DIMM	2GB, 4GB and 8GB
Expansion Slots	One (1) PCI-33MHz expansion slot (3.3V only, 32-bit)	
Graphics	Matrox G200eW (X9SBAA-F only)	
Network Connections	One (1) Intel I350AM2	
	Two (2) GbE RJ-45 Rear I/O panel connectors with link and activity LEDs	
	One (1) IPMI RJ-45 Rear I/O panel connector with KVM support (X9SBAA-F only)	
I/O Devices	**SATA Connections**	
	SATA 3.0 ports	Four (4) with RAID 0/1
	USB Devices	
	Two (2) USB 3.0 ports on the back panel	
	VGA Graphics (Back Panel)	
	One (1) VGA port (X9SBAA-F only)	
	Keyboard/Mouse	
	USB keyboard/mouse support	
	Serial (COM) Ports	
	One (1) Fast 16550 UART COM port on the I/O back panel (COM3) from S1260 as a PCI device. One (1) COM port header (COM1) from WPCM450 (X9SBAA-F only)	
BIOS	8 MB SPI AMI BIOS® SM flash BIOS	
	Plug and play, APM 1.2, DMI 2.3, ACPI 4.0a, USB keyboard support and SMBIOS 2.7	
Power	ACPI/ACPM power management, main switch override mechanism, keyboard wake-up from soft off.	
PC Health Monitoring	**CPU**	
	Onboard voltage monitors for CPU Cores: +1.8V, +3.3V, +5V, +/- 12V, +3.3V stdby, +5V stdby, VBAT, HT, memory, chipset.	
	Fans	
	Three (3) 4-pin fan headers with tachometer monitoring	

	Temperature
	CPU monitoring, chassis environment monitoring, CPU thermal trip support, PC temperature sensing logic
	LED
	CPU/system overheat, suspend state indicator, UID/Remote UID
Utilities (Download)	BIOS flash upgrade utility
	Drivers and software
Compliance	ROHS 6/6 (full compliance, lead free)
Security	One (1) TPM header, chassis intrusion detection/header
Environment Specifications	Operating Temperature Range: 0°C ~ 60°C (32°F ~ 140°F)
	Non-Operating Temperature Range: -20°C ~ 70°C (-4°F ~ 158°F)
	Operating Relative Humidity Range: 10% ~ 85% (non-condensing)
	Non-Operating Relative Humidity Range: 10% ~ 95% (non-condensing)
Dimensions	Mini-ITX form factor (6.7" x 6.7"), 8-layers

X9SBAA/-F



X9SBAA Motherboard Series Block Diagram

Note: This is a general block diagram. Please see the Motherboard Features pages for details on the features of the motherboard.

1-2 Power Configuration Settings

This section describes features of your motherboard that deal with power and power settings.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake up and the LED will automatically stop blinking and remain on.

BIOS Support for USB Keyboard

If the USB keyboard is the only keyboard in the system, it will function like a normal keyboard during system boot-up.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button. When the user presses the power button, the system will enter a Soft Off state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again will cause the whole system to wake up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system "alive." In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. The power will turn off and no power will be provided to the motherboard.

1-3 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates of 1 GHz and faster.

The SUPER® X9SBAA Motherboard Series accommodates 12V ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. A 2-Amp of current supply on a 5V Standby rail is strongly recommended.

Notes

Chapter 2

Installation

2-1 Static-Sensitive Devices

Electrostatic-Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery. Do not install the onboard upside down battery to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

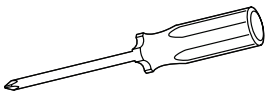
2-2 Motherboard Installation

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly. Then use a screwdriver to secure the motherboard onto the motherboard tray.

STOP

Caution: Some components are very close to the mounting holes. Please take precautionary measures to prevent damage to these components when installing the motherboard to the chassis.

Tools Needed



Philips Screwdriver

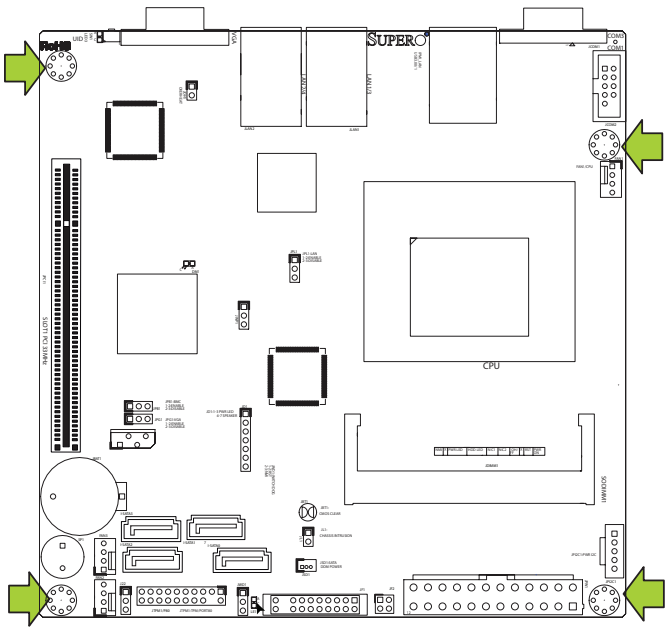
Pan head screws (4 pieces)

Stand Offs (4 pieces)
(Only if needed)

Note: The above items are not provided with this motherboard.

Location of Mounting Holes

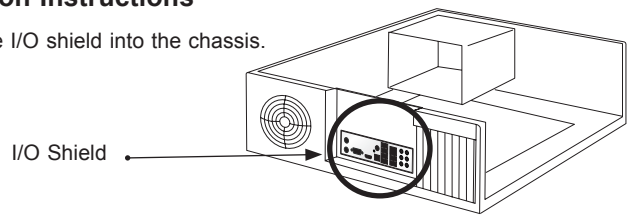
There are four (4) mounting holes on the X9SBAA motherboard series.



Caution: To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation.

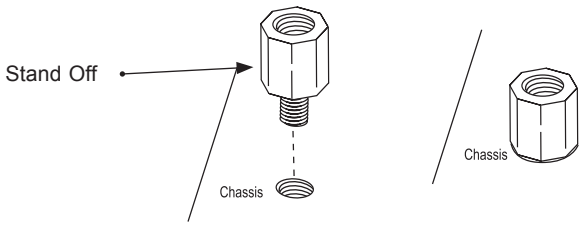
Installation Instructions

1 Install the I/O shield into the chassis.



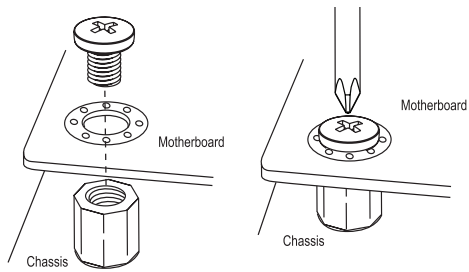
2 Locate the mounting holes on the motherboard. Refer to the layout on the previous page for mounting hole locations.

3 Locate the matching mounting holes on the chassis. Install standoffs in the chassis as needed. Align the mounting holes on the motherboard against the mounting holes on the chassis.



4 Install the motherboard into the chassis carefully to avoid damage to motherboard components.

5 Insert a Pan head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis, using the Philips screwdriver.



6 Repeat Step 4 to insert #6 screws to all mounting holes.

7 Make sure that the motherboard is securely placed on the chassis.

2-3 System Memory

CAUTION

Exercise extreme care when installing or removing SODIMM modules to prevent any possible damage.

Note: Check the Supermicro website for a list of ECC-SO-DIMMs that have been validated with the X9SBAA motherboard series.

How to Install SO-DIMMs

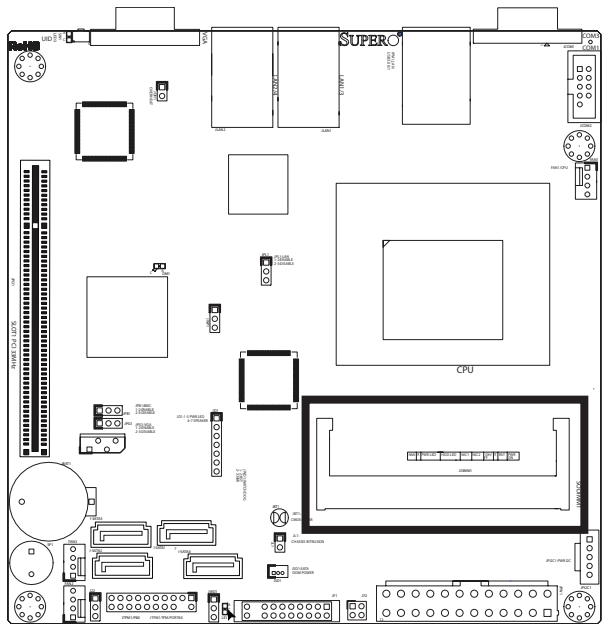
1. The motherboard has one SODIMM socket. Insert the desired size of SO-DIMM into the memory slot. Pay attention to the notch along the bottom of the module to prevent incorrect module installation.

2. Insert the SO-DIMM module at an angle and snap it into place. See instructions on the next page.

Memory Support

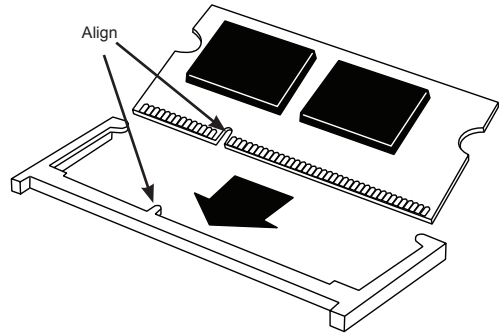
The X9SBAA Motherboard Series supports up to 8GB of unbuffered ECC DDR3 1333MHz SODIMMs in one low-profile horizontal slot.

Installing and Removing DIMMs

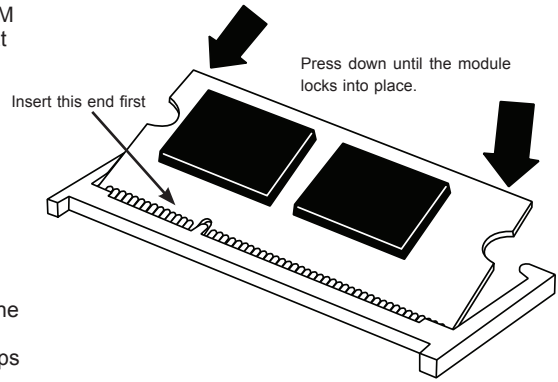


The SO DIMM Socket

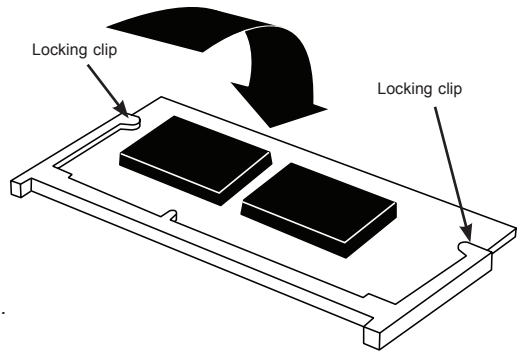
1 Position the SO DIMM module's bottom key so it aligns with the receptive point on the slot.



2 Insert the SO DIMM module vertically at about a 45 degree angle.



3 Press down until the module locks into place. The side clips will automatically secure the SO DIMM module, locking it into place.

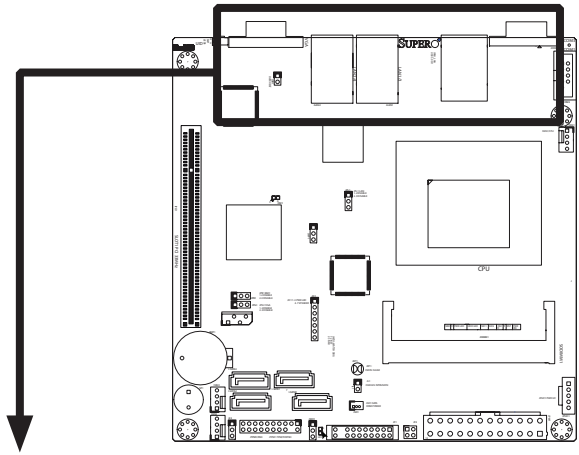


4 **To Remove:**
Use your thumbs to gently push the side clips near both ends away from the module. This should release it from the slot. Pull the SO DIMM module upwards.

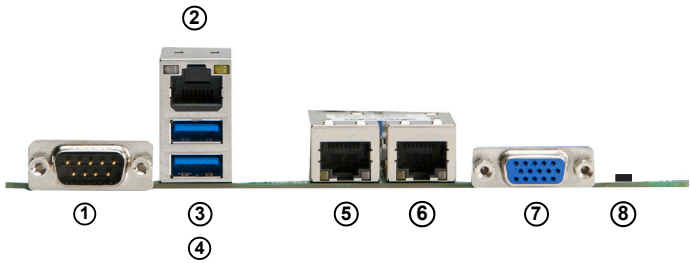
2-4 Connectors and I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See the figure below for the colors and locations of the various I/O ports.

Back Panel Connectors and I/O Ports



I/O Port Locations and Definitions



1. COM3	5. LAN1
2. IPMI LAN*	6. LAN2
3. USB0 (USB 3.0)	7. VGA Port*
4. USB1 (USB 3.0)	8. Unit ID Switch*

* for X9SBAA-F only

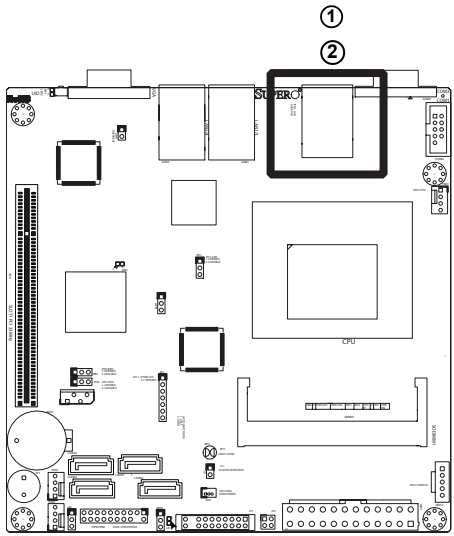
Back Panel Connectors

Universal Serial Bus (USB 0/1)

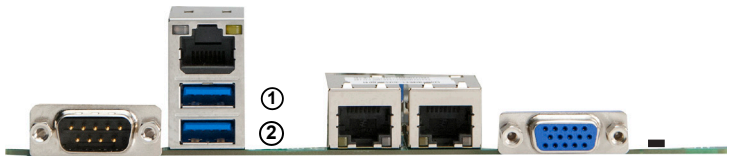
There are two Universal Serial Bus (USB 3.0) ports located on the I/O backpanel. These support data transfer speeds of up to 5Gb/sec. See the tables on the right for pin definitions.

Back Panel USB Type A USB Pin Definitions

Pin#	Definition
1	+5V
2	USB_PN
3	USB_PP
4	Ground



① USB 0 (3.0)*
② USB 1 (3.0)



Back Panel Connectors

Serial Port (COM3/COM1)

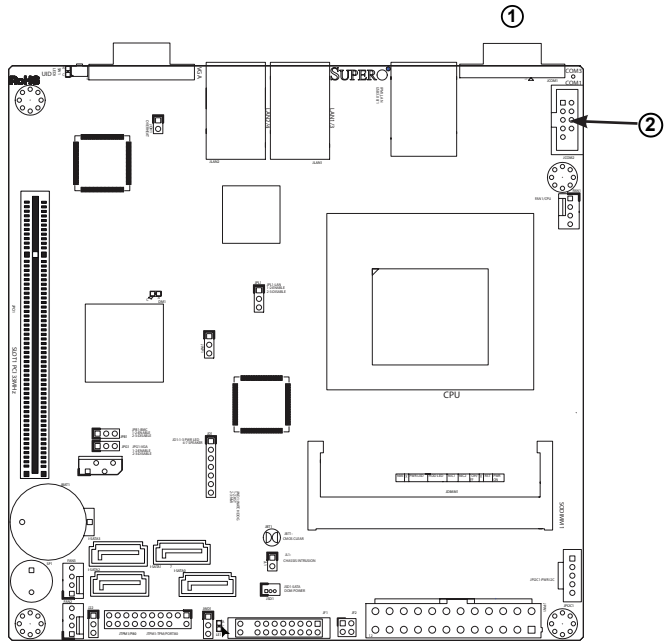
There is one COM port on the I/O back panel (COM3) and one COM header on the motherboard (COM1). These COM ports provide high-speed 16550-compatible serial communication support. See the table on the right for pin definitions.

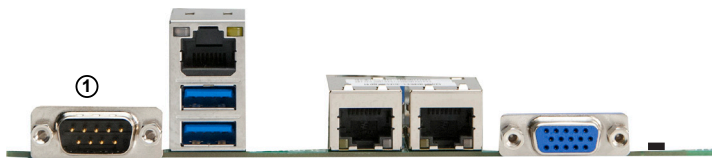
COM1 is supported on the X9SBAA-F only

Serial Ports Pin Definitions

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	N/A

① COM3
② COM1 header





Back Panel Connectors

VGA Connector (VGA)

A VGA connector is located next to LAN2 Port on the I/O back panel. This connector is used to provide video display to legacy VGA monitors. Refer to the board layout below for the location. This feature is supported on the X9SBAA-F only

VGA Port/Connector Pin Definitions

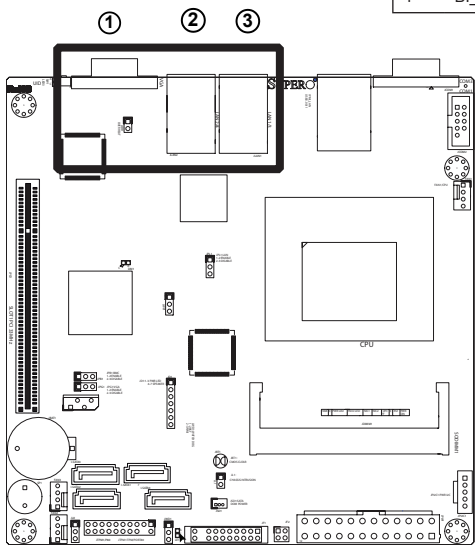
Pin #	Definition	Pin #	Definition
1	Red Video	9	+5V DC
2	Green Video	10	Ground (Vsync, DDC)
3	Blue Video	11	Reserved
4	Reserved	12	I^2C Data
5	Ground	13	H Sync
6	Red Return	14	V Sync
7	Green Return	15	I^2C Clock
8	Blue Return		

LAN Ports (LAN1/LAN2)

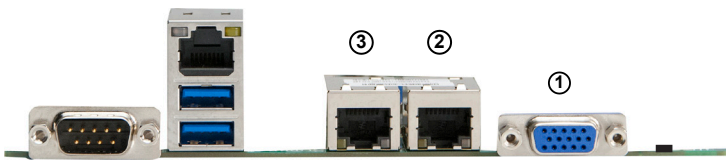
There are two gigabit LAN ports located on the I/O back panel. These ports accept RJ45 type cables. These are used to connect the motherboard to a network.

RJ45/LAN Pin Definitions

Pin #	Definition	Pin #	Definition
1	TX_D1+	5	BI_D3-
2	TX_D1-	6	RX_D2-
3	RX_D2+	7	BI_D4+
4	BI_D3+	8	BI_D4-



1 VGA Port/Connector
2 LAN2
3 LAN1



Back Panel Connectors

IPMI LAN (IPMI)

A dedicated IPMI LAN port is located above USB0 to provide dedicated network connection for IPMI 2.0 remote system management. This port accepts RJ45 type cables. The IPMI LAN is supported on the X9SBAA-F only.

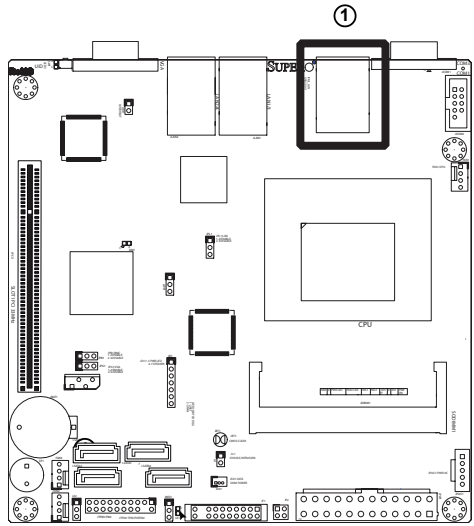
RJ45/LAN Pin Definitions

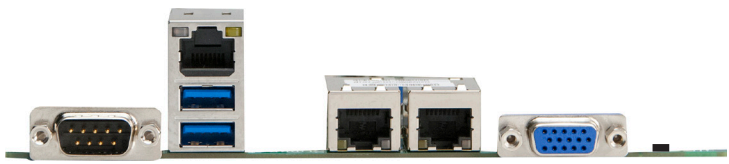
Pin #	Definition	Pin #	Definition
1	TX_D1+	5	BI_D3-
2	TX_D1-	6	RX_D2-
3	RX_D2+	7	BI_D4+
4	BI_D3+	8	BI_D4-

Rear Unit ID Switch (SW1)

The Rear UID Switch is located on the backpanel. This switch is used in conjunction with the rear UID LED to provide easy identification of a system that might be in need of service. For example, in a large server cabinet with multiple units. This is supported on the X9SBAA-F only.

① IPMI LAN
② Rear UID Switch





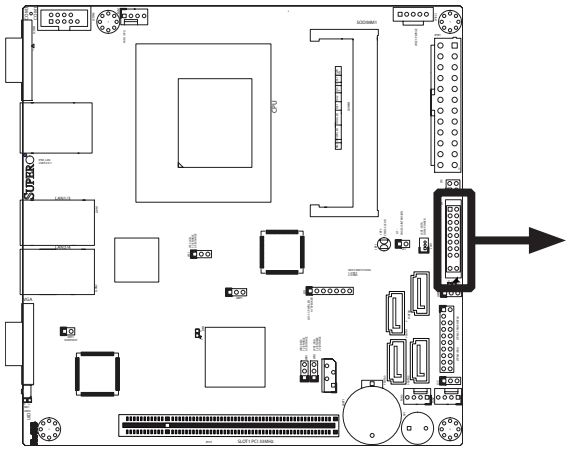
Back Panel Connectors

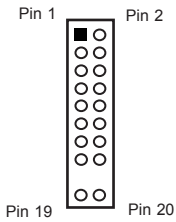
Front Control Panel

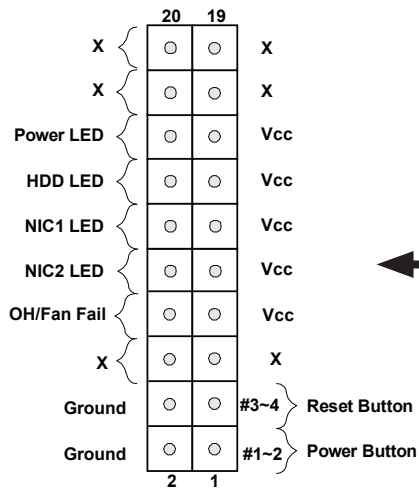
JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro server chassis. See the figure below for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

JF1 Header Pins

(Motherboard rotated 90 degrees)







Front Control Panel Pin Definitions

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	+3.3V
16	Ground

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a hard drive LED cable here to display disk activity (for any hard drive activities on the system, including Serial ATA and IDE). See the table on the right for pin definitions.

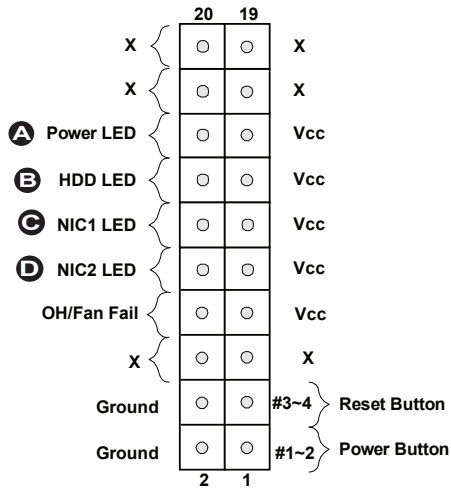
HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	+3.3V
14	HD Active

NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller or Ethernet Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN Port 2 is on Pins 9 and 10. Attach the NIC LED cables to display network activity. Refer to the table on the right for pin definitions.

NIC 1/2 LED Pin Definitions (JF1)	
Pin#	Definition
11/9	Vcc
12/10	Ground

A POWER LED
B HDD LED
C NIC1
D NIC2



JF1 Header Pins

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Signal
20	Ground

Overheat (OH)/Fan Fail LED

Connect an LED Cable to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheat or fan failure.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

OH/Fan Fail Indicator Pin Definitions (JF1)	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

Reset Button

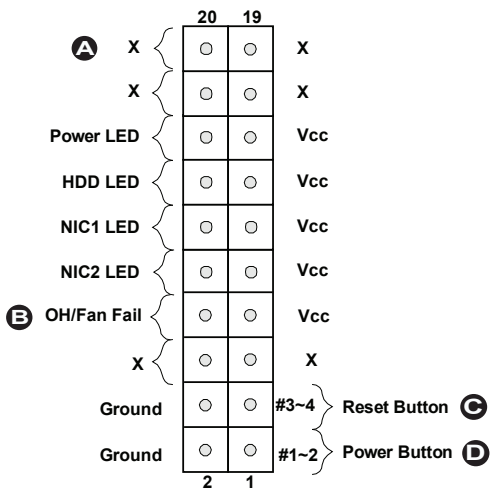
The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. To turn off the power when set to suspend mode, press the button for at least 4 seconds.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Signal
2	Ground



JF1 Header Pins

A NMI Button
B OH/Fan Fail
C Reset Button
D PWR Button

2-5 Connecting Cables

This section provides brief descriptions and pin-out definitions for onboard power connectors. Be sure to use the correct cable for each header or connector.

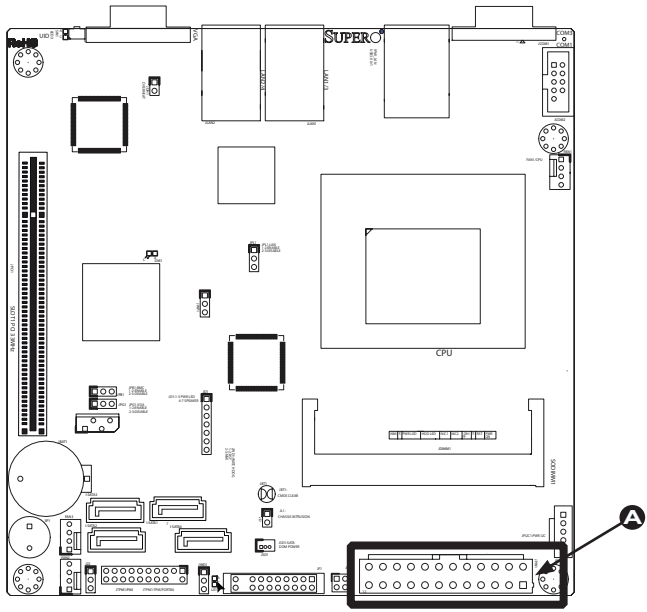
ATX Power Connectors (JPW1)

The 24-pin (JPW1) power connector is used to provide power to the motherboard from an ATX power supply. This connectors meets the SSI EPS 12V specification. See the tables on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions (JPW1)

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

A JPW1



Fan Headers (FAN1~3)

The X9SBAA Motherboard Series has three fan headers (Fan1~Fan3). These are backward compatible with three pin fans, however 4-pin fans are recommended for optimal performance. Please see the table on the right for pin definitions.

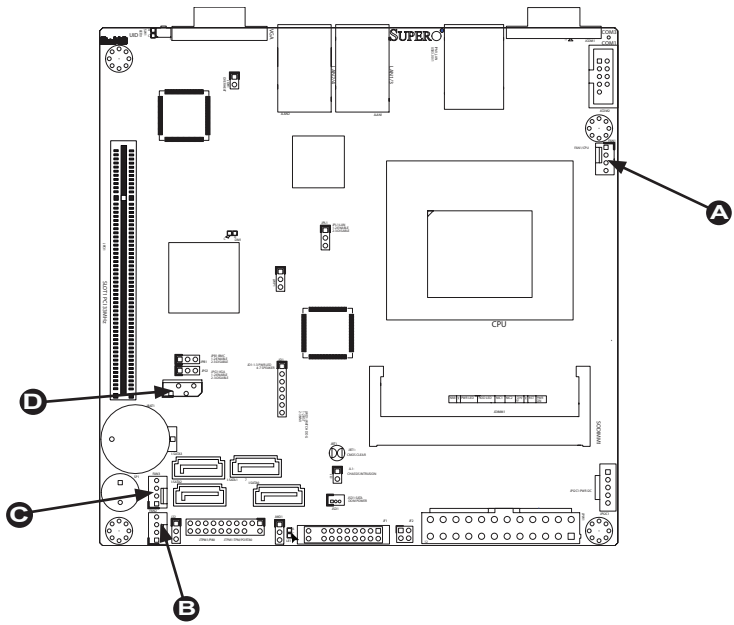
Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWM_Control

System Management Bus (JIPMB1)

A System Management Bus header for the IPMI slot is located at IPMB. Connect the appropriate cable here to use the IPMB I2C connection on your system.

System Management Bus	
Pin#	Definition
1	Clock
2	Ground
3	Data
4	No Connection

A FAN1
B FAN2
C FAN3
D JIPMB1



Chassis Intrusion (JL1)

A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

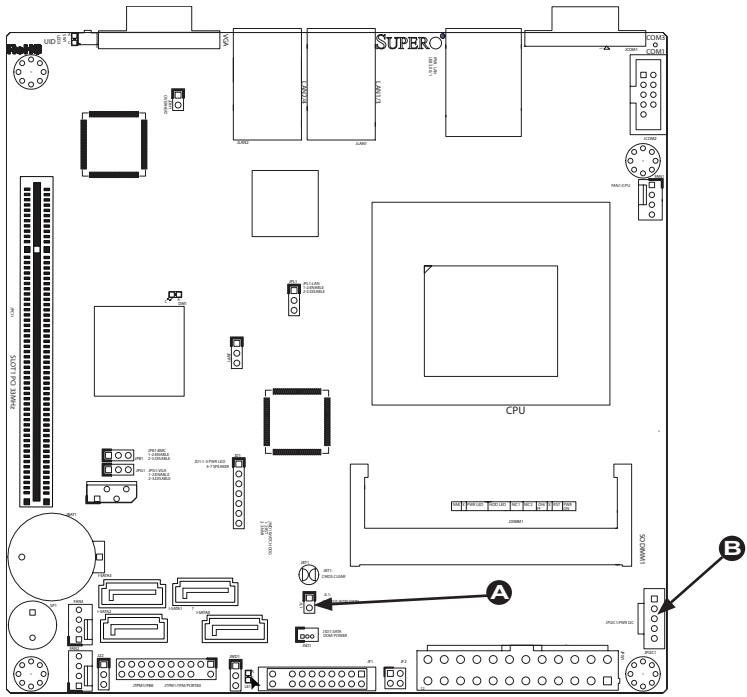
Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground

Power Supply I²C (JPI2C1)

The Power Supply I2C Connector, located at JPI2C1 monitors the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

PWR Supply I2C Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	3.3V

A JL1
B JPI2C1



SATA DOM Power (JSD1)

The SATA DOM Power on JSD1 is used to supply power to SATA Disk-on-Module (DOM) solid-state storage devices.

SATA DOM Power Pin Definitions	
Pin#	Definition
1	+5V
2	Ground
3	Ground

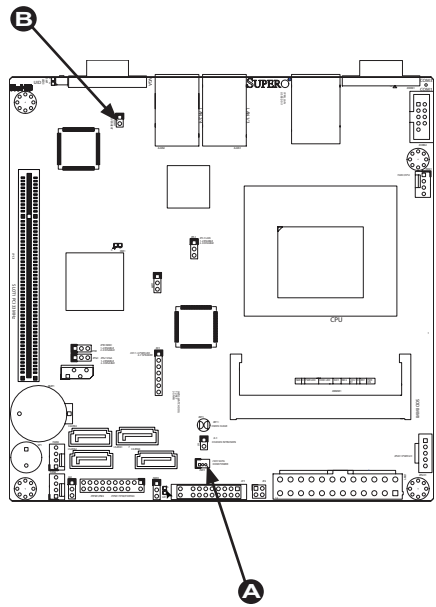
Overheat/Fan Fail LED (JOH1)

The JOH1 header is used to connect an LED to provide warnings of chassis overheat. This LED will also blink to indicate a fan failure. Refer to the table on right for pin definitions.

Overheat LED Pin Definitions	
Pin#	Definition
1	5vDC
2	OH Active

OH/Fan Fail LED Status Message	
State	Message
Solid	Overheat
Blinking	Fan Fail

A JSD1
B JOH1



Power LED/Speaker (JD1)

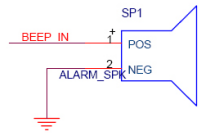
On the JD1 header, pins 1~3 are used for a power LED and pins 4~7 are used for an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a jumper. See the table on the right for speaker pin definitions.

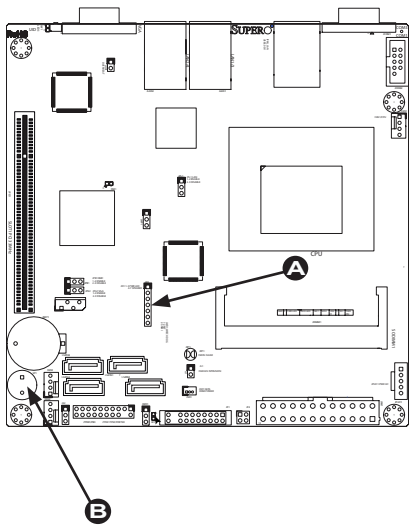
Speaker Connector Pin Definitions	
Pin Setting	Definition
Pins 6-7	Internal Speaker
Pins 4-7	External Speaker

Internal Speaker/Buzzer (SP1)

The Internal Speaker on SP1 can be used to provide audible indications for various beep codes. See the table on the right for pin definitions. Refer to the layout below for the locations of the Internal Buzzer (SP1).

Internal Buzzer Pin Definition		
Pin#		Definitions
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker





A JD1
B SP1

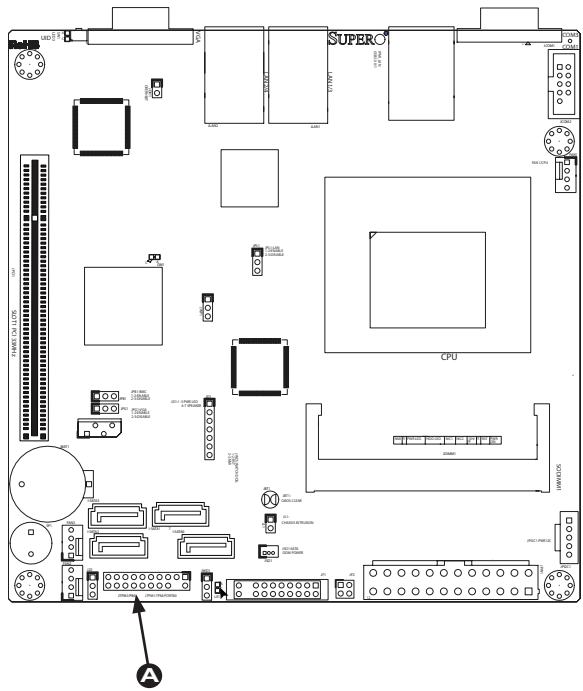
TPM Header (JTPM1)

The TPM header is used to connect a Trusted Platform Module (TPM), available from a third-party vendor. A TPM is a security device that allows encryption and authentication of hard drives. It enables the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. See the table on the right for pin definitions.

Trusted Platform Module Header Pin Definitions

Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME	4	No Pin
5	LRESET	6	VCC5
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	RSV0	14	RSV1
15	SB3V	16	SERIRQ
17	GND	18	CLKRUN
19	LPCPD	20	RSV2

A JTPM1

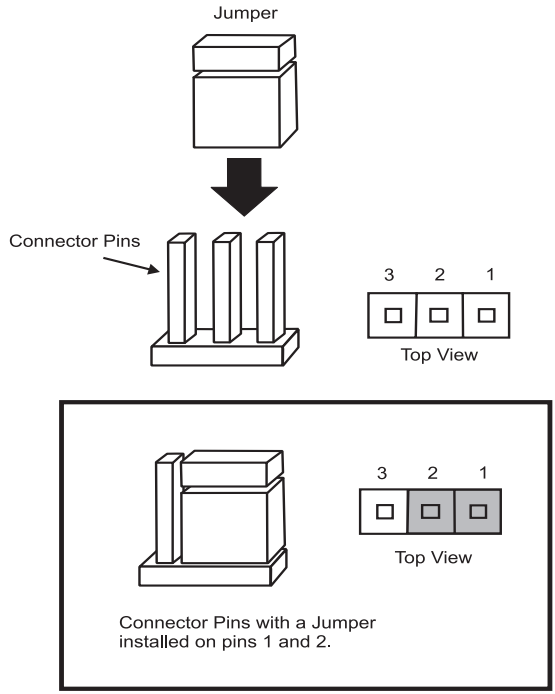


2-6 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board.

Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



BMC Enable/Disable (JPB1)

JPB1 is used to enable or disable the BMC (Baseboard Management Control) chip and the onboard IPMI connection. This jumper is used together with the IPMI settings in the BIOS. See the table on the right for jumper settings. This is supported on the X9SBAA-F only.

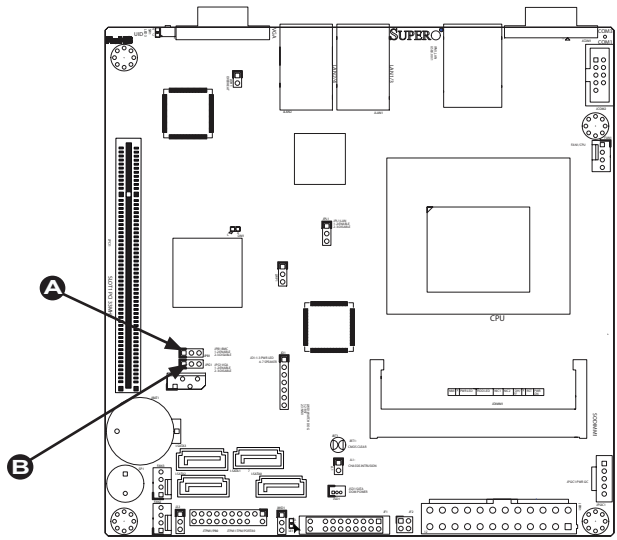
BMC IPMI Enable/Disable Jumper Settings	
Settings	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

VGA Enable (JPG1)

JPG1 allows you to enable or disable the onboard VGA connector. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Both Jumpers	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

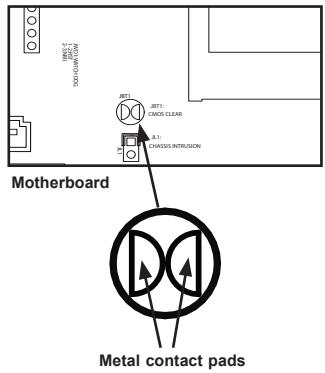
A JPB1
B JPG1



CMOS Clear (JBT1)

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS.

Important: For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS.

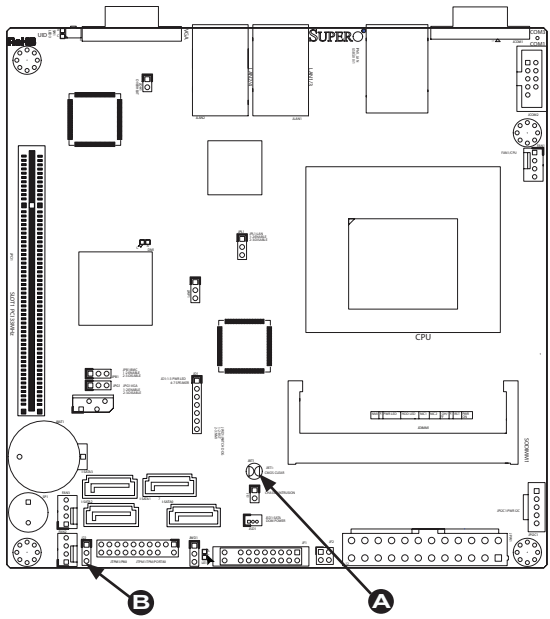


AC On Default (J22)

The AC On Default on J22 determines whether the motherboard will turn on automatically or remain off, when plugged into a power source..

AC On Default Jumper Settings (J22)	
Pin#	Definition
1-2	On (Default)
2-3	Off

A JBT1
B J22



Watch Dog Timer Reset (JWD1)

The Watch Dog Timer (JWD1) is a system monitor that can reboot the system when a software application hangs. Close Pins 1-2 to reset the system if an application hangs. Close Pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

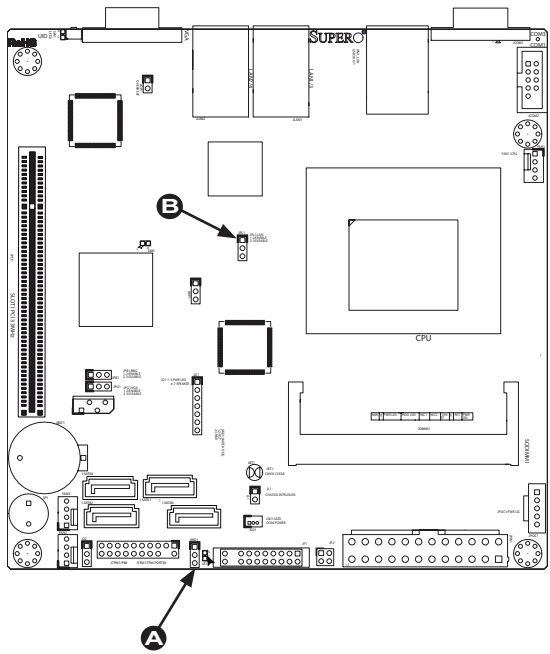
Watchdog Timer Reset Enable/Disable Jumper Settings (JWD1)	
Jumpers	Definition
Pins 1-2	Reset (Default)
Pins 2-3	NMI

LAN Port Enable/Disable (JPL1)

JPL1 is used to enable or disable the LAN Ports on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

LAN Port Enable Jumper Settings (JPL1)	
Pin#	Definition
1-2	Enabled (default)
2-3	Disabled

Ⓐ JWD1
Ⓑ JPL1



2-7 Onboard Indicators

LAN Port LEDs

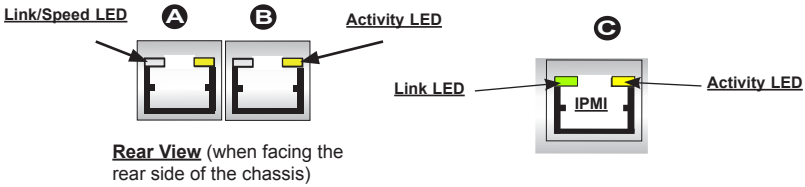
Two LAN ports are located on the I/O backpanel. Each Ethernet LAN port has two LEDs. The yellow Activity LED (right, see below) indicates activity, while the Link/ Speed LED (left) may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

GLAN Link/Speed LED Indicator	
LED Color	Definition
Off	No Connection or 10 Mbps
Green (On)	100 Mbps
Amber (On)	1 Gbps

GLAN Activity LED Indicator	
Color	Definition
Yellow (Flashing)	ConnectionActive

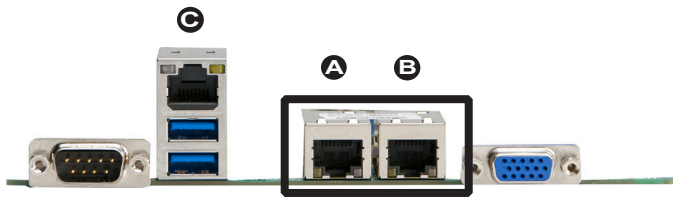
IPMI Dedicated LAN Port

An IPMI Dedicated LAN port installed on the I/O back panel. The yellow LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the tables at right for more information.



Rear View (when facing the rear side of the chassis)

A LAN Port 1
B LAN Port 2
C IPMI LAN



Back Panel Connectors

System Power LED (LE1)

An System Power LED is located at LE1 on the motherboard. When LE1 is on, the AC power cable is connected and the system is running.

Onboard PWR LED (LE1) LED Status	
Status	Definition
Off	System Off (Soft Switch)
On	System is Running

IPMI Heartbeat LED (DM1)

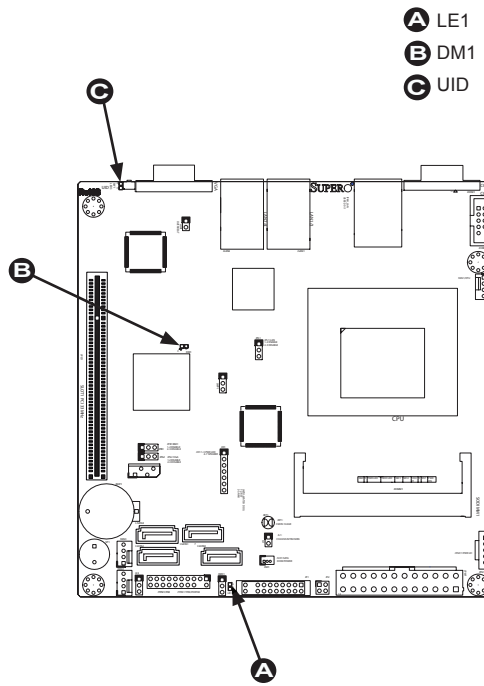
An IPMI Heartbeat LED is located at DM1. When DM1 blinks, the IPMI is functioning properly. Refer to the table on the right for details. Also see the layout below for the LED location.

IPMI Heartbeat LED Indicator (DM1) LED Settings	
Green: Blinking	IPMI is ready for use

Rear UID LED (UID)

The rear UID LED is located at UID on the backpanel. This LED is used in conjunction with the rear UID switch to provide easy identification of a system that might be in need of service.

Rear UID LED (UID) LED Settings	
Blue: Solid	UID Toggled On



2-8 Serial ATA and HDD Connections

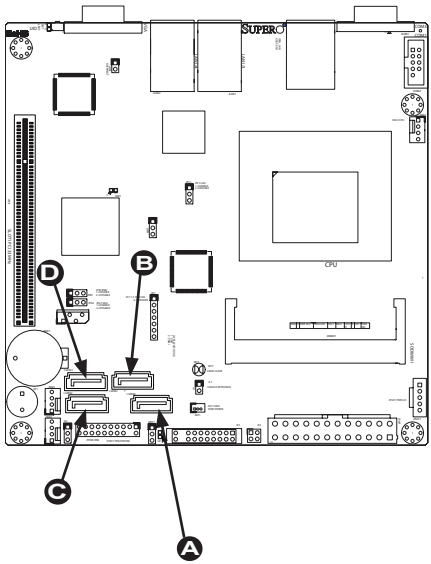
Note the following conditions when connecting the Serial ATA and hard disk drive cables:

- Be sure to use the correct cable for each connector. Refer to Page 1-1 for cables that came with your shipment.

SATA Connections (SATA0~3)

There are four SATA 3.0 ports located on the motherboard. These Serial Link connections provide fast data transmission rates of up to 6Gb/sec. See the table below for pin definitions.

SATA 3.0 Connectors Pin Definitions	
Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground



A I-SATA0
B I-SATA1
C I-SATA2
D I-SATA3

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any hardware components.

Before Power On

1. Be sure to unplug the power cable before installing or removing the components.)
2. Make sure that there are no short circuits between the motherboard and chassis.
3. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse. Also, be sure to remove all add-on cards.
4. Connect the chassis speaker and the power LED to the motherboard. Check all jumper settings as well.

No Power

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Make sure that all jumpers are set to their default positions.
3. Check if the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to make sure that it still supplies ~3VDC. If it does not, replace it with a new one.
6. Make sure the memory module installed is an ECC SO-DIMM type.

No Video

1. If the power is on, but you have no video--in this case, you will need to remove all the add-on cards and cables first.

2. Use the speaker to determine if any beep codes exist. (Refer to Appendix A for details on beep codes.)

3. Remove all memory modules and turn on the system. (If the alarm is on, check the specs of memory modules, reset the memory or try a different one.)

Memory Errors

1. Make sure that the ECC SO-DIMM module is properly installed and fully seated in the slot.

2. Please check Section 2-3 and make sure that you are using the correct memory. Also, it is recommended that you use the memory modules of the same type and speed for all DIMMs in the system.

3. Check the power supply voltage 115V/230V switch.

If You Lose the System's Setup Configuration

1. Please be sure to use a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 1-5 for details on recommended power supplies.

2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

3-2 Technical Support Procedures

Before contacting Technical Support, please make sure that you have followed all the steps listed below. Also, Note that as a motherboard manufacturer, Supermicro does not sell directly to end users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our website (http://www.supermicro.com/support/faqs/) before contacting Technical Support.

2. BIOS upgrades can be downloaded from our website at (http://www.supermicro.com/support/bios/).

Note: Not all BIOS can be flashed. Some cannot be flashed; it depends on the modifications to the boot block code.

3. If you've followed the instructions above to troubleshoot your system, and still cannot resolve the problem, then contact Supermicro's technical support and provide them with the following information:

- Motherboard model and PCB revision number
- BIOS release date/version (this can be seen on the initial display when your system first boots up)
- System configuration (OS version, peripheral devices, power supply type, etc)

An example of a Technical Support form is on our website at (http://www.supermicro.com/support/contact.cfm).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com, by phone at: (408) 503-8000, option 2, or by fax at (408)503-8019.

3-3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer:

The X9SBAA Motherboard Series supports up to 8GB of unbuffered ECC DDR3 1333 MHz SODIMM in a single low-profile horizontal slot. See Section 2-4 for details on installing memory.

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our web site at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Select your motherboard model and download the BIOS (.rom) file to your computer. Also, check the current BIOS revision and make sure that it is newer than your BIOS before downloading. You may choose the zip file or the .exe file. If you choose the zipped BIOS file, please unzip the BIOS file onto a bootable device or a USB pen/thumb drive. To flash the BIOS, run the batch file named "ami.bat" with the new BIOS ROM file from your bootable device or USB pen/thumb drive. Use the following format:

F:\> ami.bat BIOS-ROM-filename.xxx <Enter>

Notes: Always use the file named “ami.bat” to update the BIOS and insert a space between "ami.bat" and the filename. The BIOS-ROM-filename will bear the motherboard name (i.e., X9SBAA) and build version as the extension. For example, "X9SBAA0.526".

When completed, your system will automatically reboot. If you choose the .exe file, please run the .exe file under Windows to create the BIOS flash floppy disk. Insert the floppy disk into the system you wish to flash the BIOS. Then, boot the system to the floppy disk. The BIOS utility will automatically flash the BIOS without any prompts. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.

Warning: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!

When the BIOS flashing screen is completed, the system will reboot and will show “Press F1 or F2”. At this point, you will need to load the BIOS defaults. Press <F1> to go to the BIOS setup screen, and press <F9> to load the default settings. Next, press <F10> to save and exit. The system will then reboot.

Note: The SPI BIOS chip installed on this motherboard is not removable. To repair or replace a damaged BIOS chip, please send your motherboard to RMA at Supermicro for service.

If your BIOS crashes and your motherboard will no longer boot, please read Appendix C - UEFI BIOS Recovery Instructions for instructions.

Question: Why does OS installation fail if the OS does not have USB 3.0 controller support

Answer: The latest version of Windows 8 and Red Hat Linux does support USB 3.0. However, some OS such as Windows 7 does not have USB 3.0 drivers built into the OS image. Users need to deploy the USB 3.0 drivers into the OS image manually for successful installation. The other work-around is to plug in a PCI USB 2.0 card to connect the keyboard mouse and other peripherals to the USB 2.0 ports first to install the Windows 7, then install the USB 3.0 drivers after OS deployment.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Notes

Chapter 4

BIOS

4-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X9SBAA Motherboard Series. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Note: For instructions on BIOS recovery, please refer to the instruction guide posted at http://www.supermicro.com/support/manuals/.

Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.

Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

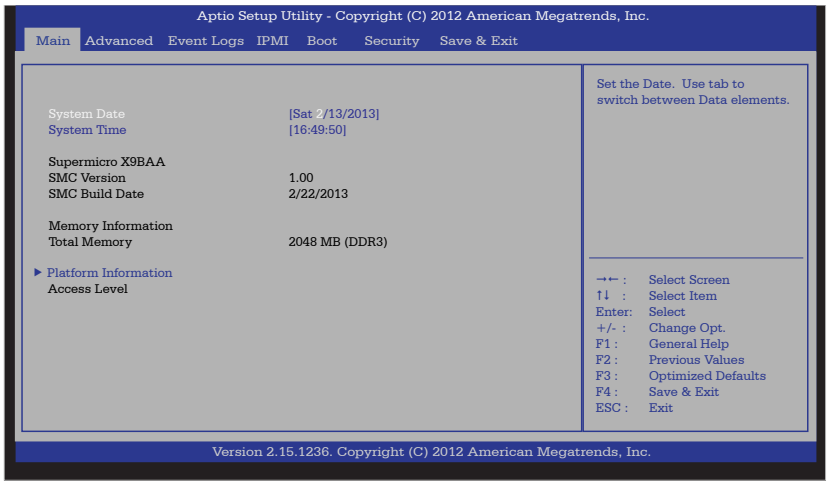
How to Start the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

4-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.



System Overview: The following BIOS information will be displayed:

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.)

Supermicro X9SBAA

SMC Version: This item displays the version of the BIOS used in the system.

SMC Build Date: This item displays the day this version of BIOS was built.

Memory Information

Total Memory: This displays the size of memory available in the system.

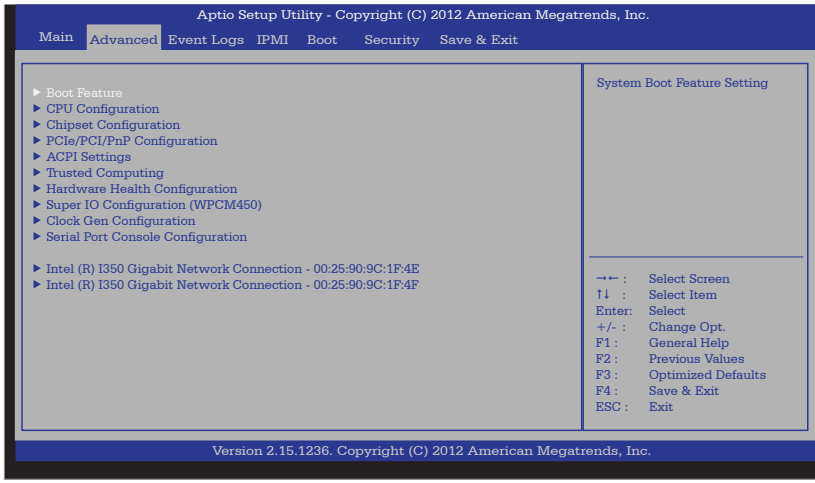
Platform Information

This section displays the processor information and firmware build date and time.

Access Level: This displays the user level currently authorized to access this setup.

4-3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and hit <Enter> to access the submenu items:



▶BOOT Feature

Quiet Boot

This option allows the bootup screen options to be modified between POST messages or the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

This sets the display mode for Option ROM. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

This feature selects the Power-on state for Numlock key. The options are Off and **On**.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at boot and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adaptors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to automatically reboot when a non-recoverable error occurs that lasts for more than five minutes. The options are Enabled and **Disabled.**

▶CPU Configuration

Warning: Take Caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or incorrect DRAM timing may cause system to become unstable. When this occurs, revert to the default setting.

Intel SpeedStep Spectrum

Select Enable to activate support for the Intel SpeedStep™ technology. The options are **Enabled** and Disabled.

Hyper Threading

Set to Enabled to use the processor's Hyper Threading Technology feature. The options are **Enabled** and Disabled.

Execute-Disable Bit (Available when supported by the OS and the CPU)

Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

Limit CPUID Maximum

This feature allows the user to set the maximum CPU ID value. Enable this function to boot the legacy operating systems that cannot support processors with extended CPUID functions. The options are Enabled and **Disabled** (for the Windows OS.).

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**.

Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

TM Support

Enable this feature to activate the CPU Thermal Management. The options are **Enabled** and Disabled (for the Windows OS.).

C-States

Use this feature to enable or disable C states C2 and above. The options are **Enabled** and Disabled.

Enhanced C1

This feature is used to enable or disable Enhanced C1 State. The options are Enabled and **Disabled**.

Enhanced C2

Use this feature to enable or disable Enhanced C2 State. The options are **Enabled** and Disabled.

Enhanced C3

This feature is used to enable or disable Enhanced C3 State. The options are Enabled and **Disabled**.

Enhanced C4

Use this feature to enable or disable Enhanced C4 State. The options are **Enabled** and Disabled.

▶Chipset Configuration

WARNING: Setting the wrong values in the following sections may cause the system to malfunction.

▶North Bridge Chipset Configuration

This item displays the current IO chipset Revision.

PMU Clock Gating

Use the feature to enable or disable the PMU (Power Management Unit) Clock Gating. The options are Enabled and **Disabled**.

PMU Clock Gating

Use this feature to enable or disable the PMU (Power Management Unit) Clock Gating. The options are Enabled and **Disabled**.

UNIT Clock Gating

This feature is used to enable or disable the Unit Clock Gating. The options are **Enabled** and Disabled.

Fast Boot

Use this feature to enable or disable fast boot, which skips memory training and attempts to boot the last known good configuration. The options are **Enabled** and Disabled.

Memory Test

This feature is used to enable or disable memory test during boot. The options are **Enabled** and Disabled.

MRC Debug Messages

Use this feature to enable or disable debug output in MRC (Memory Reference Code). The options are **Enabled** and Disabled.

DIMM vref Override

This feature is used to enable or disable DIMM vref override. The options are Enabled and **Disabled**.

MRC Reset Loop

Use this feature to enable or disable MRC (Memory Reference Code) to loop infinitely. The options are Enabled and **Disabled**.

ECC Support

Use this feature to enable or disable ECC (Error Checking and Correction) support. The options are **Enabled** and Disabled.

Patrol Scrub Enable

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enabled, the North Bridge will read and write back one cache line every 16K cycles, if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the North Bridge will be scrubbed every day. The options are Enabled and **Disabled**.

Patrol Scrub Period

Use this feature to select the length of time period the system uses for Patrol Scrubbing. The options are **24 Hours**, 10 Hours, 4 Hours and 1 Hour.

Demand Scrub Enable

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is updated as well. Select Enabled to use Demand Scrubbing for ECC memory correction. The options are **Enabled** and Disabled.

DDR Low Voltage

Use this feature to select DDR Low Voltage support. The options are **Disabled** and Enabled.

Rank Margin Tool

Use this feature to enable or disable the DDR Rank Margin Tool support. The options are **Disabled** and Enabled.

Dynamic Self Refresh

Use this feature to enable or disable the Dynamic Self Refresh in the memory controller. The options are **Immediate** and Disabled.

Open Page Policy Timer

Use this feature to set the Open Page Policy Timer. The options are Disabled, Immediate, 30-60 ns, 60-120 ns, **120-240 ns**, 240-480 ns, 480-960 ns and 1-2 us.

Memory Performance DMap

Set this feature to select the Memory Performance DMap. The options are **DMAP_A** and DMAP_C.

BWFLUSH

Set this feature to select the BWFLUSH. The options are **BWFLUSH_A** and BWFLUSH_E.

Scrambler

Use this feature to enable or disable the Scrambler. The options are **Enabled** and Disabled.

Uncore Thermal Throttle

Use this feature to master enable or disable of Internal Hardware Thermal Throttling for internal thermal sensor-based hardware throttling Interrupts

are not affected by this, and is for 'hot trip' throttling only. The options are **Enabled** and Disabled.

Set the following for Default Thermal Enforcement for Thermal Trips

SchWriteMask,
SchReadMask,
MemoryRankWriteMask,
MemoryRankReadMask

The options are Bandwidth Allowed 0%, Bandwidth Allowed 12.5%, Bandwidth Allowed 25%, Bandwidth Allowed 37.5%, Bandwidth Allowed 50%, Bandwidth Allowed 62.5%, **Bandwidth Allowed 70%**, Bandwidth Allowed 87.5%, and Bandwidth Allowed 100%,.

Set the following for Lowest Thermal Enforcement Limits

SchWriteMask,
SchReadMask,
MemoryRankWriteMask,
MemoryRankReadMask

The options are Bandwidth Allowed 0%, Bandwidth Allowed 12.5%, **Bandwidth Allowed 25%**, Bandwidth Allowed 37.5%, Bandwidth Allowed 50%, Bandwidth Allowed 62.5%, Bandwidth Allowed 70%, Bandwidth Allowed 87.5%, and Bandwidth Allowed 100%,.

P_RTF_THERM

Use this feature to set Punit RTF Thermal Enforcement Limits. The options are No Thermal Throttle, Grants 8 clocks off 56 clocks on, Grants 16 clocks off 48 clocks on, Grants 24 clocks off 48 clocks on, **Grants 32 clocks off 32 clocks on**, Grants 40 clocks off 24 clocks on, Grants 48 clocks off 16 clocks on, and Grants 56 clocks off 8 clocks on.

▶South Bridge Chipset Configuration

▶PPM Config

C-state POPUP

Use this feature to enable or disable the C-state POPUP support. The options are **Enabled** and Disabled.

▶USB Configuration

Legacy USB Support

Use this feature to enable or disable Legacy USB support. The Auto option disables legacy support, if no USB devices are connected. If Disabled, it

will keep USB devices available only for EFI applications. The options are **Enabled**, Disabled, and Auto.

USB 3.0 Support

Use this feature to enable or disable the USB 3.0 (XHCI) Controller support. The options are **Enabled** and Disabled.

XHCI Hand-Off

This item is for Operating Systems that do not support Enhanced Host Controller Interface (EXCI) hand-off. When enabled, XHCI ownership change will be claimed by the EHCI driver. The settings are **Enabled** and Disabled.

USB Mass Storage Driver Support

Use this feature to enable or disable the USB Mass Storage Driver support. The options are **Enabled** and Disabled.

▶PCIe/PCI/PnP Configuration

This feature allows the user to set the PCI/PnP configurations for the following items:

Launch Storage OpROM Policy

In case of multiple Option ROMs (Legacy and EFI-compatible), this feature specifies what ROM to launch. The options are **Legacy Only** and UEFI Only.

Launch Video OpROM Policy

In case of multiple Option ROMs (Legacy and EFI-compatible), this feature specifies what ROM to launch. The options are **Legacy Only** and UEFI Only.

PCI Latency Timer

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32 PCI Bus Clocks, **64 PCI Bus Clocks**, 96 PCI Bus Clocks, 128 PCI Bus Clocks, 160 PCI Bus Clocks, 192 PCI Bus Clocks, 224 PCI Bus Clocks and 248 PCI Bus Clocks.

PERR# Generation

Set this item to Enabled to allow PCI devices to generate PERR# error codes. The options are Enabled and **Disabled**.

SERR# Generation

Set this item to Enabled to allow PCI devices to generate SERR# error codes. The options are Enabled and **Disabled**.

Maximum Payload

This feature selects the setting for the PCIE maximum payload size. The options are Auto, **128 Bytes,** and 256 Bytes**.**

Maximum Read Request

This feature selects the setting for the PCIE maximum Read Request size. The options are Auto**, 128 Bytes,** 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes**.**

ASPM Support

Set this item to the desired ASPM (Active State Power Management) level. The options are **Disabled,** Auto and Force L0s.

Onboard LAN Option ROM Select

This feature selects whether to load the iSCSI or PXE onboard LAN option ROM. The options are iSCSI and **PXE**.

Load Onboard LAN1 Option ROM / Load Onboard LAN2 Option ROM

This feature is to enable or disable the onboard option ROMs. The options are Disabled and Enabled. The default for LAN 1 is **Enabled**. Default for LAN 2 is **Disabled**.

Network Stack

Use this feature to enable or disable the network stack (PXE and UEFI). The options are **Disabled** and Enabled.

▶ACPI Configuration

Use this section to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

Enable Hibernation

If set to enabled, the system will be able to hibernate (enter OS/S4 sleep state). The options are Disabled and Enabled.

High Precision Timer

Select Enabled to activate the high precision timer that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

▶Trusted Computing

TPM Support

Select Enable to activate BIOS support for trusted platforms (TPM 1.1/1.2) and allow the BIOS to automatically download the drivers needed to provide support for the platforms specified. The options are Disable and **Enable**.

TPM State

This feature changes the TPM State. The options are Disabled and **Enabled**. Note: The system will restart to change the TPM State.

Pending operation

Displays any TPM-related operation by the system.

Pending operation

The following are informational status messages that indicate the current TPM State:

TPM Enabled Status

TPM Active Status

TPM Owner Status

▶Hardware Health Configuration

Fan Speed Control Mode

This feature allows the user to decide how the system controls the speed of the onboard fans. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling. This setting is recommended for special system configuration or debugging. Select "Standard" for the onboard fans to run at 20% of the Initial PWM Cycle in order to balance the needs between system cooling and power saving. In Standard mode, the fan speed will increase up to full speed, depending on motherboard system temperature. This setting is recommended for regular systems with normal hardware configurations. The options are Full Speed (@100% of PWM Cycle), and **Standard** (@20-100% linear change of PWM Cycle).

CPU, System, Peripheral Temperature

This feature displays the system and peripheral device temperatures, as detected by the motherboard sensors.

Fan1 ~ Fan3 Speed

This feature displays the fan speed readings from fan interfaces Fan1 through Fan3.

+5V, +12V, 5VSB, VDIMM, +1.05V, +3.3V, +3.3VSB, VBAT

This feature displays the current voltages of the above voltage monitors.

▶Super IO Device Configuration

▶Serial Port 1 Configuration / Serial Port 2 Configuration (SOL)

Serial Port

Select Enabled to enable the onboard serial port. The options are **Enabled** and Disabled.

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port becomes unavailable.

The options for Serial Port 1 are:

Auto,

IO=3F8h; IRQ=4;

IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

The options for Serial Port 2 are:

Auto,

IO=2F8h; IRQ=3;

IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

Device Mode

This selects the serial port's device mode. The options are **Normal** and High Speed.

▶Clock Gen Configuration

Clock Spread Spectrum

Select Enable to use the feature of Clock Spectrum, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. Select Disabled to enhance system stability. The options are **Disabled** and Enabled.

▶Serial Port Console Redirection

COM1, COM2 (SOL) Console Redirection

Use this feature to enable console redirection for COM1, COM2 (SOL) ports. The options are Enabled and Disabled. The default for COM1 and COM2 (SOL) is **Disabled**.

▶Console Redirection Settings

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Terminal Type : Select ANSI, **VT100**, VT100+, or VT-UTF8

Bits per Second (BPS): 9600, 19200, 38400, 57600, or **115200**

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

Flow Control: **None** or Hardware RTS/CTS

VT-UTF8 Combo Key Support: **Enabled** or Disabled

Recorder Mode: **Disabled** or Enabled

Resolution 100x31: Disabled or **Enabled**

Legacy OS Redirection Resolution: 80x24 or **80x25**

PuTTY Keypad: **VT100**, Linux, XTerm86, SCO, ESCN, VT400

Serial Port for Out-of-Band Management / Windows Emergency Management Services (EMS)

Use this feature to enable console redirection.

Console Redirection

Use this feature to enable console redirection for Serial Port Out-of-Band Management / Windows Emergency Management Services (EMS) ports. The options are **Enabled** and Disabled.

▶Console Redirection Settings

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Out-of-Band Mgmt Port: **COM1**, COM2, and SOL

Terminal Type: Select ANSI, VT100, VT100+, or **VT-UTF8**

Bits per Second (BPS): 9600, 19200, 57600, or **115200**

Flow Control: **None,** Hardware RTS/CTS, Software Xon/Xoff

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

▶Intel® I350 Gigabit Network Connection (x2)

Use these features to configure the Ethernet device parameters.

▶NIC Configuration

Link Speed

Use this feature to change the link speed and duplex for the current port. This feature cannot currently be changed using the BIOS.

Wake on LAN

Wake on LAN is currently not supported.

Blink LEDs

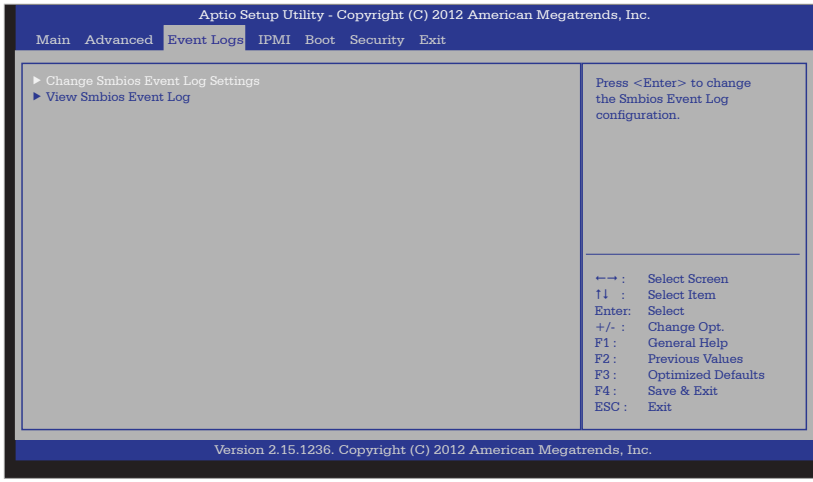
This feature allows the user to specify the duration for LEDs to blink. The range is from 0 ~ 15 seconds. The default setting is **0**.

PORT CONFIGURATION INFORMATION

This section displays the following port information:

- UEFI Driver
- Adapter PBA
- Chip Type
- PCI Device ID
- PCI Bus:Device:Function
- Link Status
- Factory MAC Address

4-4 Event Logs


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Exit
► Change Smbios Event Log Settings
► View Smbios Event Log
Press <Enter> to change the Smbios Event Log configuration.
←→ : Select Screen
↑↓ : Select Item
Enter: Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

►Change SmBIOS Event Log Settings

Smbios Event Log

Change this item to enable or disable all features of the Smbios Event Logging during boot. The options are **Enabled** and Disabled.

Runtime Error Logging Support

Change this item to enable or disable runtime error logging. The options are **Enabled** and Disabled.

PCI Error Logging Support

Change this item to enable or disable runtime error logging. The options are **Enabled** and Disabled.

Corr Error Threshold

Change this item to define the system's memory correction error threshold. Directly enter a numeric value, **default is 10**.

Erase Event Log

This option erases all logged events. The options are **No**, Yes, Next reset and Yes, Every reset.

When Log is Full

This option automatically clears the Event Log memory of all messages when it is full. The options are **Do Nothing** and Erase Immediately.

Log System Boot Event

This option toggles the System Boot Event logging to enabled or disabled. The options are **Disabled** and Enabled.

MECI

The Multiple Event Count Increment (MECI) counter counts the number of occurences a duplicate event must happen before the MECI counter is incremented. This is a numeric value. The default value is **1**.

METW

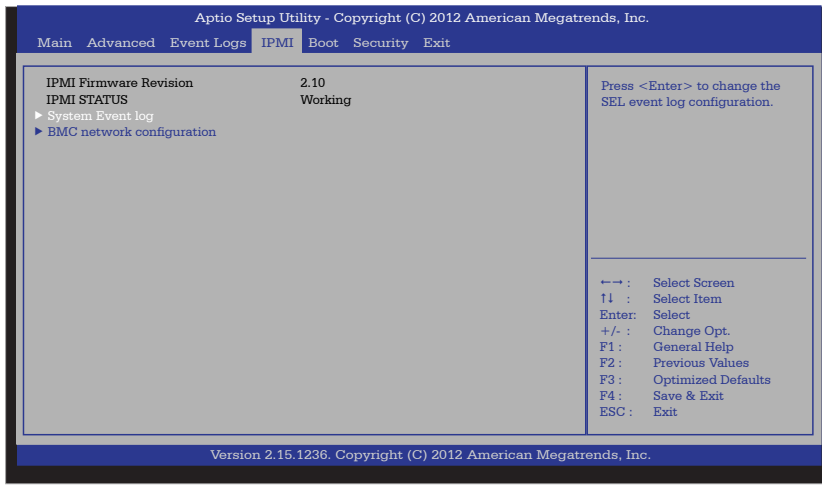
The Multiple Event Time Window (METW) defines number of minutes must pass between duplicate log events before MECI is incremented. This is in minutes, from 0 to 99. The default value is **60**.

▶View SmBIOS Event Log

This feature displays the contents of the SmBIOS Event Log.

4-5 IPMI

Intelligent Platform Management Interface (IPMI) is a set of common interfaces that IT administrators can use to monitor system health and to manage the system as a whole. For more information on the IPMI specifications, please visit Intel's website at www.intel.com.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Exit
IPMI Firmware Revision 2.10
IPMI STATUS Working
▶ System Event log
▶ BMC network configuration
Press <Enter> to change the SEL event log configuration.
←→ : Select Screen
↑↓ : Select Item
Enter: Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
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▶System Event Log

This feature is used to change the Sytem Event Log (SEL) configuration.

SEL Components - Change this item to enable or disable all features of System Event Logging. The options are **Enabled** and Disabled. When Enabled, the following can be configured:

Erase SEL - This option erases all logged SEL events. The options are **No**, Yes, On Next reset and Yes, On Every reset.

When SEL Full

This option automatically clears the System Event Log memory of all messages when it is full. The options are **Do Nothing** and Erase Immediately.

Log EFI Status Codes

This option enables or disables the logging of Extensible Firmware Interface (EFI) status codes. The options are **Enabled** and Disabled.

▶BMC Network Configuration

Set this feature to configure the IPMI LAN adapter with a network address.

Update IPMI LAN Configuration

This feature allows the user to decide if the BIOS should configure the IPMI setting at next system boot. The options are **No** and Yes. If the option is set to Yes, the user is allowed to configure the IPMI settings at next system boot.

Configuration Source

This feature selects whether the IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server (Dynamic Host and Configuration Protocol) "Dynamic" or manually entered by the user "Static". If Static is selected, the IP Address, Subnet Mask and Gateway Address must be manually entered below. When Dynamic is selected, all the options below are automatically assigned to the system by itself or by an external DHCP server.

The options are Static and **DHCP**. The following items are displayed when Static is selected:

Station IP Address - Enter the IP address for this machine. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255.

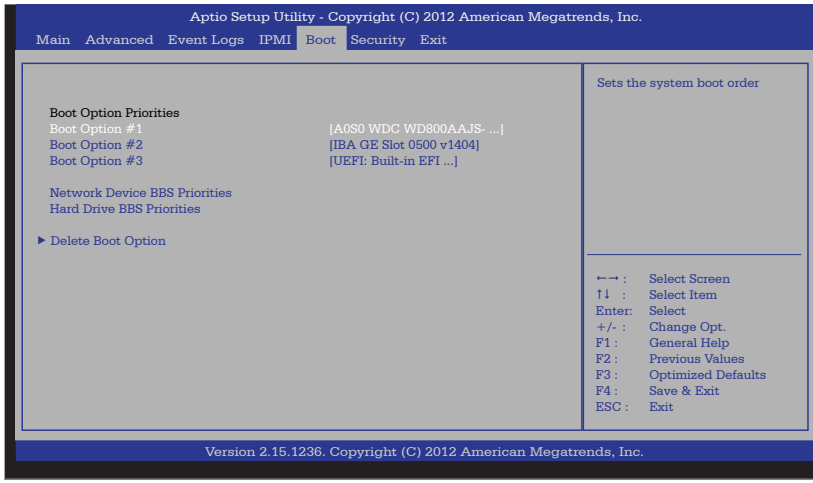
Subnet Mask - Subnet masks tell the network which subnet this machine belongs to. The value of each three-digit number separated by dots should not exceed 255.

Station MAC Address - MAC addresses are 6 two-digit hexadecimal numbers (Base 16, 0 ~ 9, A, B, C, D, E, F) separated by dots (i.e., 00.30.48.D0.D4.60).

Gateway IP Address - Enter the Gateway or Router address this machine will use (i.e., 192.168.10.1).

4-6 Boot Settings

Use this feature to configure Boot Settings:


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Exit
Boot Option Priorities
Boot Option #1 [A0S0 WDC WD800AAJS- ...]
Boot Option #2 [IBA GE Slot 0500 v1404]
Boot Option #3 [UEFI: Built-in EFI ...]
Network Device BBS Priorities
Hard Drive BBS Priorities
▶ Delete Boot Option
Sets the system boot order
←→ : Select Screen
↑↓ : Select Item
Enter: Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
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Boot Options Priorities

This feature allows the user to specify which devices are boot devices and the order of priority from which the systems boots during startup.

Boot Option #1, Boot option #2, etc.

The settings are **Built-in EFI Shell**, [any detected boot device] and Disabled.

Network Device BBS Priorities, Hard Drive BBS Prioirities

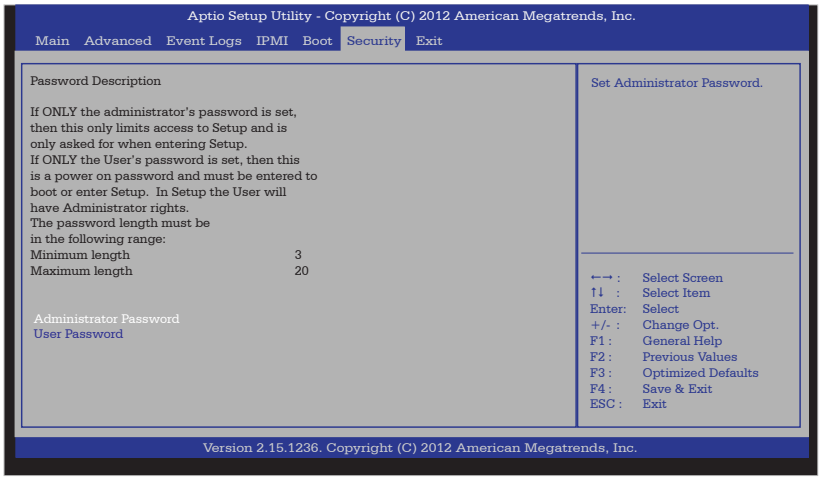
This option sets the order of the legacy network devices detected by the motherboard.

▶Delete Boot Option

This feature allows the user to delete a previously defined boot device from which the systems boots during startup.

The settings are **Built-in EFI Shell**, and [any pre defined boot device]

4-8 Security Settings


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Exit
Password Description
If ONLY the administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Set Administrator Password.
←→ : Select Screen
↑↓ : Select Item
Enter: Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
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- If the Administrator password is defined ONLY - this controls access to the BIOS setup ONLY.
- If the User's password is defined ONLY - this password will need to be entered during each system startup or boot, and will also have Administrator rights in the setup.
- Passwords must be at least 3 and up to 20 characters long.

Administrator Password

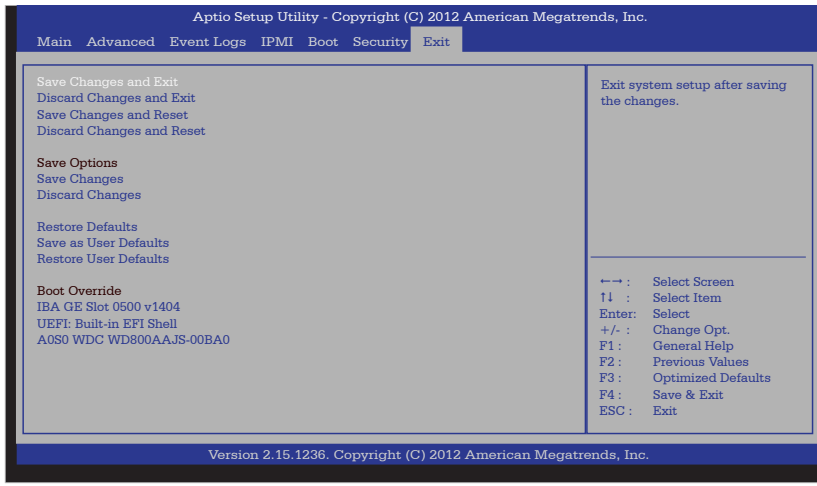
Press Enter to create a new, or change an existing Administrator password.

User Password:

Press Enter to create a new, or change an existing User password.

4-8 Save & Exit

Select the Exit tab from the BIOS Setup Utility screen to enter the Exit BIOS Setup screen.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Event Logs IPMI Boot Security Exit
Save Changes and Exit
Discard Changes and Exit
Save Changes and Reset
Discard Changes and Reset
Save Options
Save Changes
Discard Changes
Restore Defaults
Save as User Defaults
Restore User Defaults
Boot Override
IBA GE Slot 0500 v1404
UEFI: Built-in EFI Shell
A0S0 WDC WD800AAJS-00BA0
Exit system setup after saving the changes.
←→ : Select Screen
↑↓ : Select Item
Enter: Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
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Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and Exit BIOS setup, the new system configuration parameters may not take effect until the system is rebooted. Select Yes to Save Configuration and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Yes to Quit Without Saving and and press <Enter>.

Save Changes and Reset

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system configuration parameters can take effect. Select Yes to Save Configuration and Reset from the Exit menu and press <Enter>.

Discard Changes and Reset

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Yes to Reset Without Saving and and press <Enter>.

Save Changes

When you have completed the system configuration changes, select this option to save any changes made. This will not reset (reboot) the system.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.

Restore Defaults

To set this feature, select Restore Defaults from the Exit menu and press <Enter>. These are factory settings designed for maximum system stability, but not for maximum performance.

Save As User Defaults

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use.

Restore User Defaults

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

Boot Override

Listed on this section are other boot options for the system (i.e., Built-in EFI shell). Select an option and press <Enter>. Your system will boot to the selected boot option.

Appendix A

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the AMI BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep with the front panel Overheat LED on - system overheat

8 short beeps - display memory read/write error

Notes

Appendix B

Software Installation Instructions

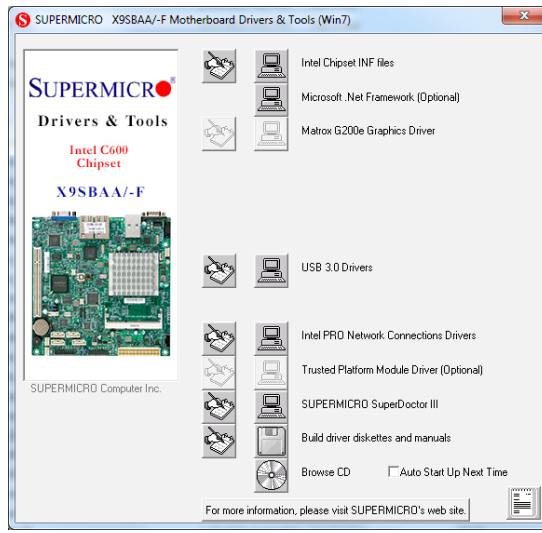
B-1 Installing Software Programs

The Supermicro ftp site contains drivers and utilities for your system at ftp://ftp.supermicro.com. Some of these must be installed, such as the chipset driver.

After accessing the ftp site, go into the CDR_Images directory and locate the ISO file for your motherboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro Website at http://www.supermicro.com/products/. Find the product page for your motherboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown below should appear.



Driver/Tool Installation Display Screen

Note 1: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

Note 2. When making a storage driver diskette by booting into a Driver CD, please set the SATA Configuration to "Compatible Mode" and configure SATA as IDE in the BIOS Setup. After making the driver diskette, be sure to change the SATA settings back to your original settings.

B-2 Configuring SuperDoctor III

The SuperDoctor® III program is a web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The SuperDoctor III program allows you to monitor the environment and operations of your system. SuperDoctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the figures below for examples of the SuperDoctor III interface.

Note: The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

Note: When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within SuperDoctor III, as the SuperDoctor III settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

SuperDoctor III Interface Display Screen (Health Information)

SuperDoctor® III
Remote Management
SUPERMICRO
ADMIN
System Info. | Health Info. | Performance | Remote Control | Configuration | Administration | Systems Management | Report | Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Graceful power control (cancelable)
Supero Doctor III allows a user to inform the OS to reboot or shut down the system within 30 seconds. On the system console, a pop-up window will appear with a message telling the local user to save his working files. Before the system reboots or shuts down, it's allowed to cancel the action either locally or remotely.
Power control (noncancelable)
Supero Doctor III allows a user to inform the OS to reboot or shut down the system right away. The system will reboot or shut down without any warning messages. It's not allowed to cancel the action.

SuperDoctor III Interface Display Screen (Remote Control)

Note: SD III Software Revision 1.0 can be downloaded from our Web Site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download the SDIII User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf>. For Linux, we will recommend using Supero Doctor II.

Notes

Disclaimer

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